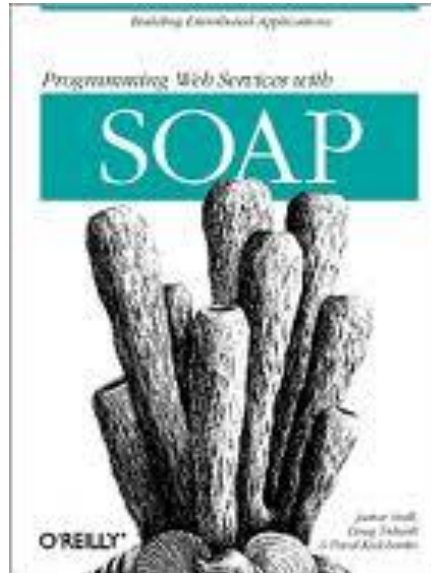
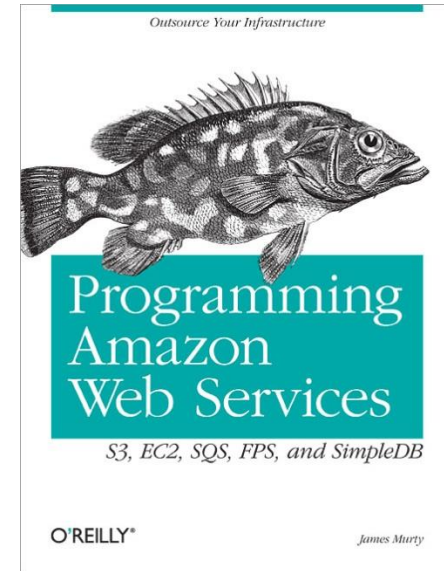
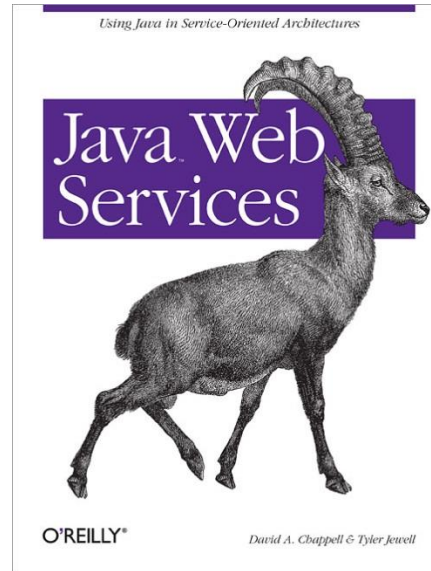
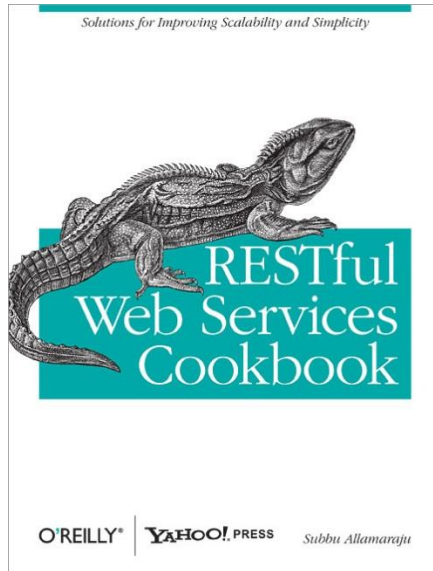


Web services



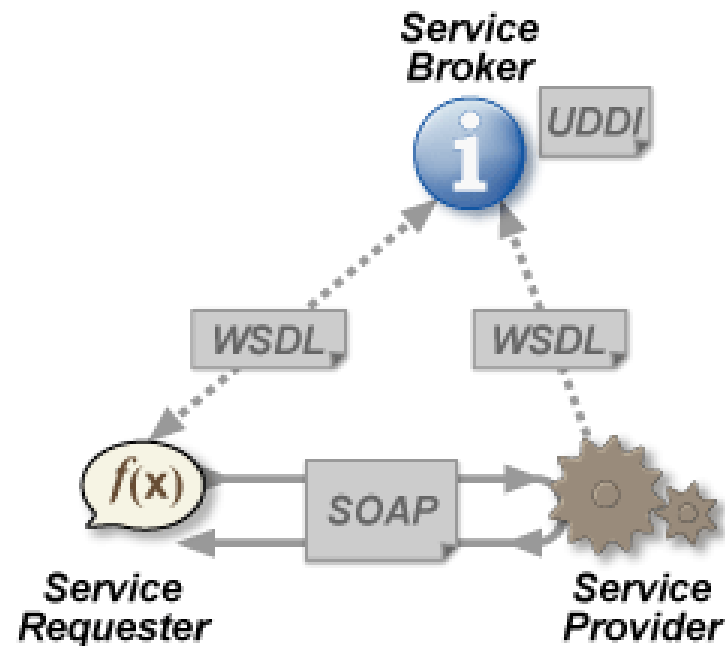
Overview

- Web services
 - What does that mean?
 - Why are they useful?
 - Examples!
- Major interaction types
 - REST
 - SOAP

Web service

From Wikipedia, the free encyclopedia

A **Web service** is a method of communication between two electronic devices over the web.



W3C says...

1.4 What is a Web service?

For the purpose of this Working Group and this architecture, and without prejudice toward other definitions, we will use the following definition:

[Definition: A Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.]

Web services

- **Basic idea:**
 - Allows others to use your:
 - **Unique functionality**, e.g. translating English to Spanish
 - **Unique data**, e.g. find out where your FedEx package is
 - Do this over the Internet
 - In a standard way using a known protocol (e.g. HTTP)
 - Possible business uses:
 - Within a company to integrate things
 - Between a company and partners
 - For free, promote your new fangled search engine
 - e.g. Bing (but now commercial)
 - For money, (e.g. \$5/1000 search queries)

Bing web services

Bing Maps Platform in Action

See how leading brands and organizations use the Bing Maps Platform to innovate, connect with customers and increase their business insight.



Search API

[GET STARTED NOW](#)

Embed, analyze, and customize search data

Build unique apps with Bing's web, image, news, and video search results – and more
Access powerful structured data using JSON, XML, or OData
Customize how search data is integrated in your product or service

Maps API

[GET STARTED NOW](#)

Integrate fast, accurate and beautiful maps

Develop amazing map experiences with ease
Build innovative applications that display your data, engage end users and improve business insight
Access tools for developing mobile apps on Windows Phone, Android, and iOS

Translator API

[GET STARTED NOW](#)

Instant translation anytime, anywhere

Integrate a rich, flexible and simple to use API for custom applications across web, desktop and mobile
Use powerful translation tools such as the Microsoft Translator Hub for custom translation and language preservation solutions

Using Bing search API

- **Apply for an app ID**
 - Get a Windows Live account
 - Get an app ID: e.g. ABBJ3923CEFHB39398FEFE37
- **Choose your "protocol":**
 - JavaScript Object Notation (JSON)
 - Extensible Markup Language (XML)
 - SOAP (original Simple Object Access Protocol)
- **Make your search request**
 - Use a language/command line tool of your choice
 - My example: REST with JSON result format

Using Bing search API

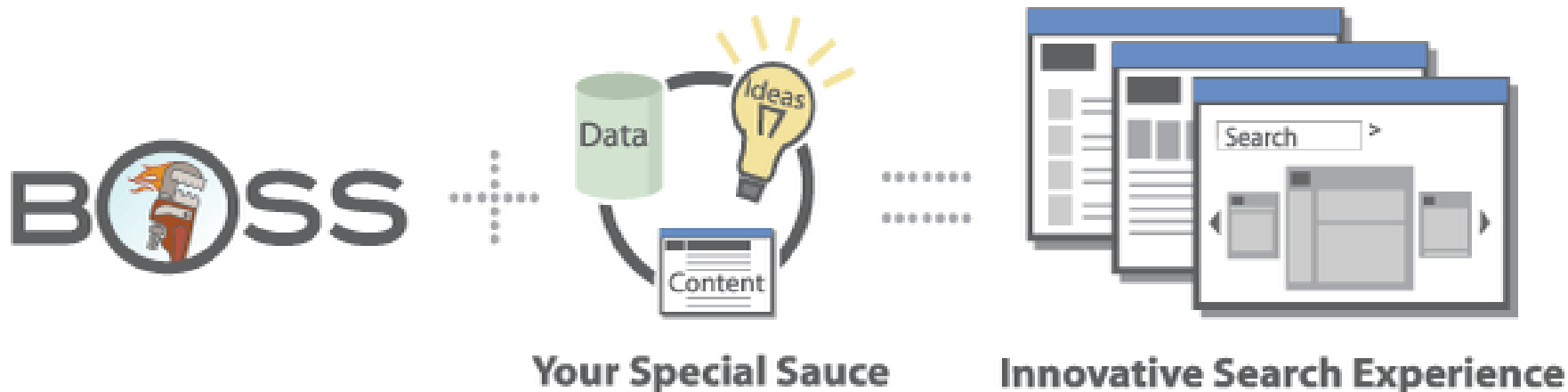
- Find the top-10 Bing results for "orediggers"
 - Make a HTTP GET request
 - 2012 style, authentication via GET parameter:
 - `http://api.bing.net/json.aspx?AppId=AFKJEAWKFJEAWKFJA&Version=2.2&Market=enUS&Query=orediggers&Sources=web+spell&Web.Count=10&JsonType=raw`
 - 2013/14 style (HTTP basic authentication):
 - [https://api.datamarket.azure.com/Bing/Search/Web?Query=%27oredigger%27&\\$top=10&\\$format=json](https://api.datamarket.azure.com/Bing/Search/Web?Query=%27oredigger%27&$top=10&$format=json)

Yahoo web services




Yahoo! Search BOSS API

BOSS (Build your Own Search Service) is Yahoo!'s open search and data services platform. The goal of BOSS is simple: to foster innovation in the search industry. Developers, start-ups, and large Internet companies can use BOSS to build web-scale search products that utilize Yahoo! Search technology and data. By combining your unique assets and ideas with our search technology assets, you can build innovative experiences that delight your users. BOSS is offered with a low flexible usage fee based on the type of queries. You can also get search advertising in the same service to monetize your offerings.



Google web services

★ Google Latitude API

Home [Docs](#) [FAQ](#) [Forum](#) [Terms](#) 

What is the Google Latitude API?



The Google Latitude API allows for websites and programs to integrate with [Google Latitude](#), enabling users to update and read their current location, their location history, and [more!](#)

How do I start?

1. Find out the basics on [Getting Started](#).
2. Find out how to [use REST](#) to invoke the Google Latitude API by reading the Developer's Guide.
3. Browse the Google Latitude API [Reference Guide](#).
4. [Get community support](#). Join our community and participate in our discussion group.

★ Google Calendar APIs and Tools

Home [Docs](#) [FAQ](#)

What are the Google Calendar APIs and Tools?



Life's important events all in one place. Google Calendar offers many ways to create and share content other than the web interface that we all know and love.



Calendar API

The [Calendar API](#) lets you incorporate Calendar functionality into your own application or website. You can edit calendars, create and delete events, send invitations, and more.



Calendar Gadgets

[Calendar Gadgets](#) let you extend Google Calendar to give your users a custom, content-rich experience. Create status displays, interactive events, and custom user interface controls.

★ JSON/Atom Custom Search API

[Home](#)[Docs](#)[Blog](#)[Forum](#)[Terms](#)

Developer's Guide

[Introduction](#)[Getting Started](#)[The Basics](#)[Defining Your Search](#)[Engine Specifications](#)[Selecting Sites to Search](#)[On-demand Indexing and](#)[Removal](#)[Changing the Ranking of](#)[Your Search Results](#)[Helping Your Users Refine](#)[Their Searches](#) Updated![Improving User Queries](#)[For More Relevant](#)[Results](#)[Promotions](#)[Designing the Look and
Feel](#)[Making Money](#)[Admin Accounts](#)

Programmer's Guides

[Creating Custom Search](#)[Engines](#)[Customizing Your Result](#)[Snippets](#)[Filtering and Sorting](#)[Search Results](#)

JSON/Atom Custom Search API

The JSON/Atom Custom Search API lets you develop websites and programs to retrieve and display search results from [Google Custom Search](#) programmatically. With this API, you can use RESTful requests to get search results in either JSON or Atom format.

Important: The JSON/Atom Custom Search API requires the use of an API key, which you can get from the [Google APIs console](#). The API provides 100 search queries per day for free. If you need more, you may sign up for [billing](#) in the console.

Available Documentation

Version 1 is the latest available version of the JSON/Atom Custom Search API. Its documentation includes:

- A **Developer's Guide**. Provides information on basic concepts and step-by-step instructions on how to use the common features of the API.

This guide focuses on the RESTful method of invoking the API, or HTTP calls that use REST verbs (such as `GET` and `POST`) to access JSON or Atom data structures.

You can access the documentation available for the JSON/Atom Custom Search API below:

API Version	Developer's Guide	Reference
v1	Getting Started, Using REST	Reference

Pricing

Free quota

Usage is free for all users, up to 100 queries per day.

Paid Usage

Any usage beyond the free usage quota will fail if you are not signed up for [billing](#). Once you have enabled billing, you will continue to receive 100 free queries per day. However, you will be billed for all additional requests at the rate of \$5 per 1000 queries, for up to 10,000 queries per day. If you need additional quota, please request additional quota from the console.

Facebook web services



Hack the Graph

Build with the Open Graph. Integrate deeply into the Facebook experience. Grow lasting connections with your users.

[Get Started](#) or [Learn More](#)



Build for Websites

Drive growth and engagement on your site through Facebook Login and Social Plugins.



Build for Mobile

Let users find and connect to their friends in mobile apps and games.



Build Apps on Facebook

Integrate with our core experience by building apps that operate within Facebook.

FedEx web services



Ship ▾

Track ▾

Manage ▾

Learn ▾

FedEx Office® ▾

Search fedex



- ▶ [FedEx Web Services](#)
- ▶ [FedEx Web Integration Wizard](#)
- ▶ [Learning Hub](#)
- ▶ [FedEx Developer Resource Center](#)

Unleash the power of FedEx Web Services

FedEx Web Services enables you to integrate dynamic FedEx® shipping capabilities into your website. Your customers can ship, get rates, track the status of their shipments, validate addresses and process returns without ever leaving your site or logging into fedex.com. Turn to FedEx Web Services to provide your customers with a more powerful user experience. Plus, FedEx Web Services can help improve your business processes and help your company run more efficiently. FedEx Web Services is powerful, easy to use and free!

Keeping you up to date with APIs, mashups and the Web as platform. [Learn more](#) »

Find APIs, mashups, code and developers

Search

Popular searches: [photo](#) [google](#) [flash](#) [mapping](#) [enterprise](#) [sms](#)

10868
APIs

7301
Mashups

New APIs

- ▶ [Universal SMS Advertising](#)
- ▶ [SMS Ingenuity](#)
- ▶ [E-go](#)
- ▶ [FarmSense](#)
- ▶ [Red Frog Freight](#)
- ▶ [Realtime Express](#)
- ▶ [See more APIs](#)

Mashup of the Day



▶ [See previous winners](#)

New Mashups

- ▶ [Brainsell-Technologies + DocuSign](#)
- ▶ [Coinstackr](#)
- ▶ [DocuSign and Egnyte](#)
- ▶ [Brainsell-Technologies + DocuSign](#)
- ▶ [Weever Apps - DocuSign Integration](#)
- ▶ [European word translator](#)
- ▶ [See more mashups](#)

<http://www.icndb.com/api/>

Twitter web services

twitter developers

Search



API Health

Blog

Discussions

Docu

[Home](#) → [Documentation](#)

Getting Started

Updated on Wed, 2011-09-28 16:40

Twitter is an information network and communication mechanism that produces more than 200 million tweets a day. The Twitter platform offers access to that corpus of data, via our APIs. Each API represents a facet of Twitter, and allows developers to build upon and extend their applications in new and creative ways. It's important to note that the Twitter APIs are constantly evolving, and developing on the Twitter Platform is not a one-off event.

Sipping on the Twitter Spritzer...

statuses/sample

Returns a random sample of all public statuses. The default access level, 'Spritzer' provides a small proportion of the Firehose, very roughly, 1% of all public statuses. The "Gardenhose" access level provides a proportion more suitable for data mining and research applications that desire a larger proportion to be statistically significant sample. Currently Gardenhose returns, very roughly, 10% of all public statuses. Note that these proportions are subject to unannounced adjustment as traffic volume varies.

- **URL:** <https://stream.twitter.com/1/statuses/sample.json>
- **Method(s):** GET
- **Parameters:** [count](#), [delimited](#), [stall_warnings](#)
- **Returns:** stream of [status element](#)

Just go to this URL in a browser and enter your Twitter username and password! Or programmatically:

```
curl -k https://stream.twitter.com/1/statuses/sample.json -  
umyuser:mypassword
```


Programmatic access...

```
static void Main(string[] args)
{
    HttpWebRequest  webRequest      = null;
    HttpResponse    webResponse     = null;
    StreamReader     responseStream  = null;

    while (true)
    {
        try
        {
            webRequest = (HttpWebRequest)
                WebRequest.Create("https://stream.twitter.com/1/statuses/sample.json");
            webRequest.Credentials = new NetworkCredential("username", "password");
            webRequest.Timeout = -1;
            webResponse = (HttpResponse) webRequest.GetResponse();
            responseStream = new StreamReader(webResponse.GetResponseStream(),
                System.Text.Encoding.GetEncoding("utf-8"));
            Console.WriteLine(responseStream.ReadLine());
        }
        catch (WebException ex)
        {
            Console.WriteLine(ex.Message);
        }
    }
    ...
}
```

C# example printing out the Twitter spritzer (worked prior to June 2013).

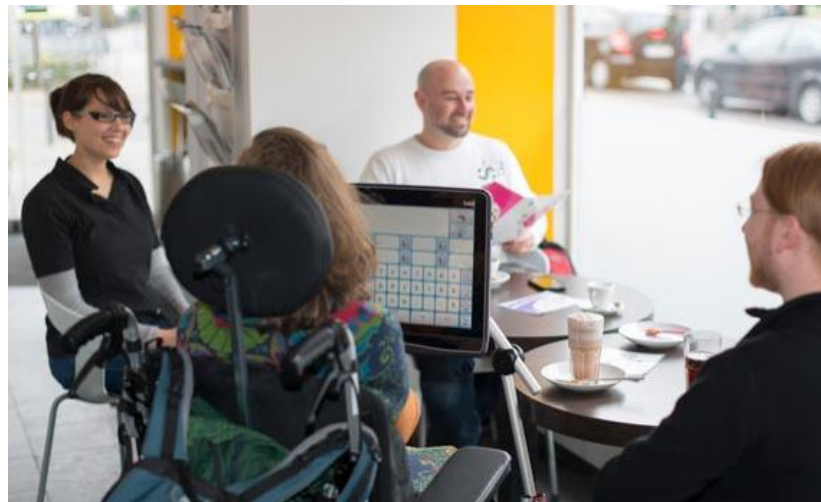
Twitter streaming API

- Streaming API: ~1% of world's Tweets for free
 - Collecting since early 2011
 - Currently:
 - 1.4T compressed

```
{ "retweeted": false, "text": "@cellulose_gum quase sempre", "geo": null, "created_at": "Mon Dec 20 03:32:43 +0000", "user": { "screen_name": "cellulose_gum" } }
{ "retweeted": false, "text": "@Ferestart123 porque eu n\u00e3o falo com meu namorado desde quarta :S", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "Ferestart123" } }
{ "retweeted": false, "text": "RT @operationSAFE: YW @butterfly101664 Thanks for the #opsafe love! #tear", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "operationSAFE" }, "retweeted_status": { "retweeted": false, "text": "Vote for @Rihanna and @RihannaDaily http://www.z100.com", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "RihannaDaily" } } }
{ "retweeted": false, "text": "RT @iTz_MaMa_2U: Happy Birthday Sophie !! @PurpleAlamode Enjoy your day !", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "iTz_MaMa_2U" }, "retweeted_status": { "retweeted": false, "text": "Happy Birthday Sophie !! @PurpleAlamode Enjoy your day !", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "PurpleAlamode" } } }
{ "retweeted": false, "text": "I just bought a 180sx and just wondering what problems you guys have had", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "180sx" } }
{ "retweeted": false, "text": "concerveja n\u00e3o \\/\ ( @withoutnotion live on http://\twitcam.com\/33", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "withoutnotion" } }
{ "retweeted": false, "text": "@MoreBradley Maybe we should start #needsmorebradleystache", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "MoreBradley" } }
{ "retweeted": false, "text": "q merda, n consigo ir pro banho.. o papo ta mt interessante @_@", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "@_@" } }
{ "retweeted": false, "text": "Ain't no body as cold as this do the rap and the track. Triple Double No", "geo": null, "created_at": "Mon Dec 20 03:32:44 +0000", "user": { "screen_name": "TripleDoubleNo" } }
{ "retweeted": false, "text": "My bad. █████ shut up.", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "█████" } }
{ "retweeted": false, "text": "@u_kisseli what is \u57c\u6c5\u774? U gave him away? Don't be sad \u2764", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "u_kisseli" } }
{ "retweeted": false, "text": "Acabo de completar \"Qual o seu tipo de sorriso?\" e meu resultado foi: I", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "QualoSeuTipoDeSorriso" } }
{ "retweeted": false, "text": "Tuh @adiTIAN_ , jgn suka nambah sambel ya!! RT @detikcom: Harga Cabai Kid", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "adiTIAN_" }, "retweeted_status": { "retweeted": false, "text": "Como no encuentras \"con qui\u00e9n\", te obsesionas", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "detikcom" } } }
{ "retweeted": false, "text": "There is no generational divide on Social Security: 0", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "SocialSecurity" } }
{ "retweeted": false, "text": "Ahora a apagar la TV hasta que vuelva la 4ta temporada de #los80.", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "los80" } }
{ "entities": { "user_mentions": [ { "indices": [ 5, 21 ], "id_str": "18697486", "name": "Flip", "id": 18697486, "screen_name": "Flip" } ] }, "text": "Developing in a 'Final Frontier' of Hoboken: EVEN in a tough real estate", "geo": null, "created_at": "Mon Dec 20 03:32:45 +0000", "user": { "screen_name": "FinalFrontier" } }
```

I just bought some milk...

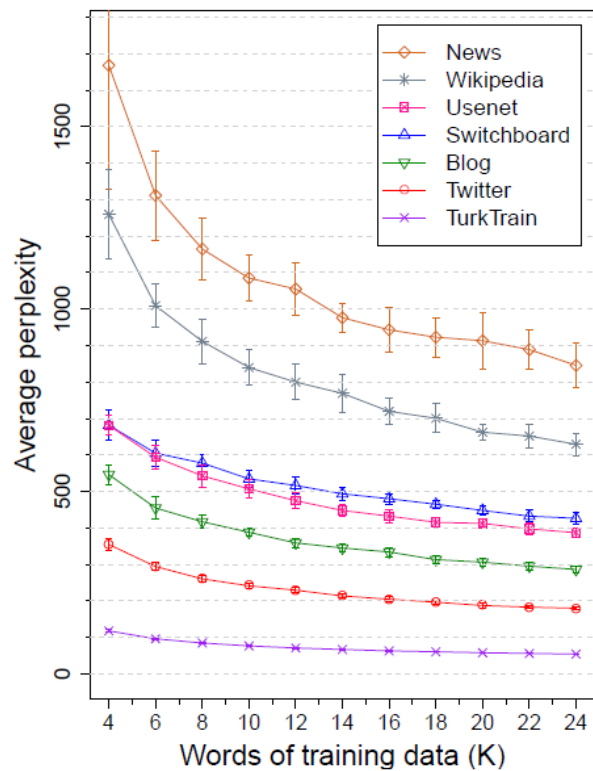
- What do with all these Tweets?
 - Often informal person-to-person communications
 - Augmentative and Alternative Communication (AAC)
 - Enable users with certain disabilities to speak
 - AAC devices often rely on statistical language models
 - Language models historically have been trained on small amounts of non-representative data



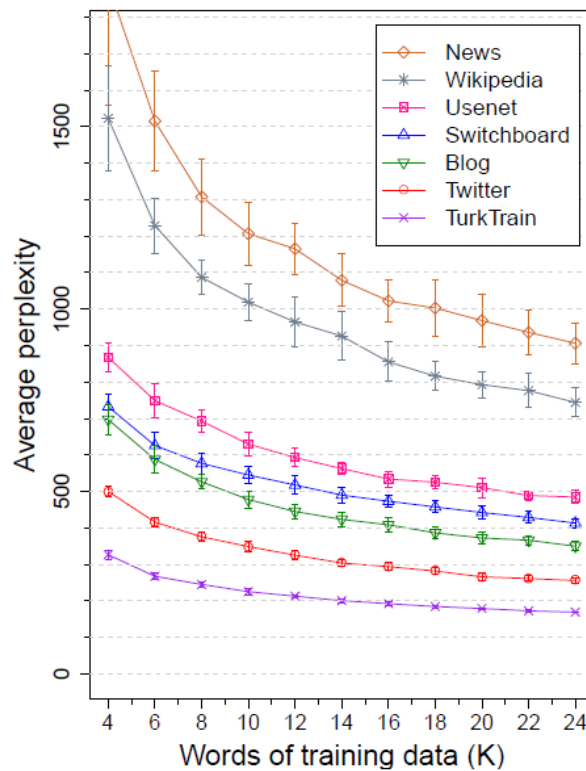
The Imagination of Crowds: Conversational AAC Language Modeling using Crowdsourcing and Large Data Sources

Abstract

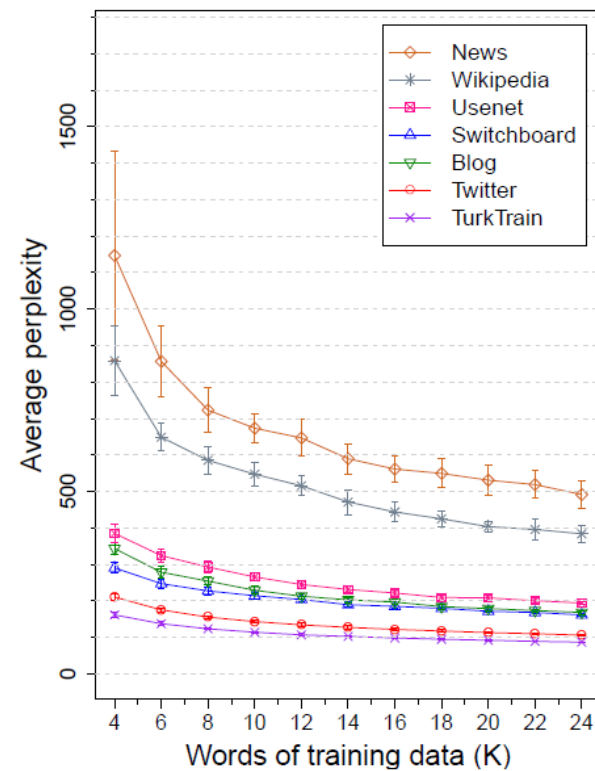
Augmented and alternative communication (AAC) devices enable users with certain communication disabilities to participate in everyday conversations. Such devices often rely on statistical language models to improve text entry by offering word predictions. These predictions can be improved if the language model is trained on data that closely reflects the style of the users' intended communications. Unfortunately, there is no large dataset consisting of genuine AAC messages. In this paper we demonstrate how we can crowdsource the creation of a large set of fictional AAC messages. We show that these messages model conversational AAC better than the currently used datasets based on telephone conversations or newswire text. We leverage our crowdsourced messages to intelligently select sentences from much larger sets of Twitter, blog and Usenet data. Compared to a model trained only on telephone transcripts, our best performing model reduced perplexity on three test sets of AAC-like communications by 60–82% relative. This translated to a potential keystroke savings in a predictive keyboard interface of 5–11%.



(a) TURKDEV test set



(b) COMM test set



(c) SPECIALISTS test set

Mashups

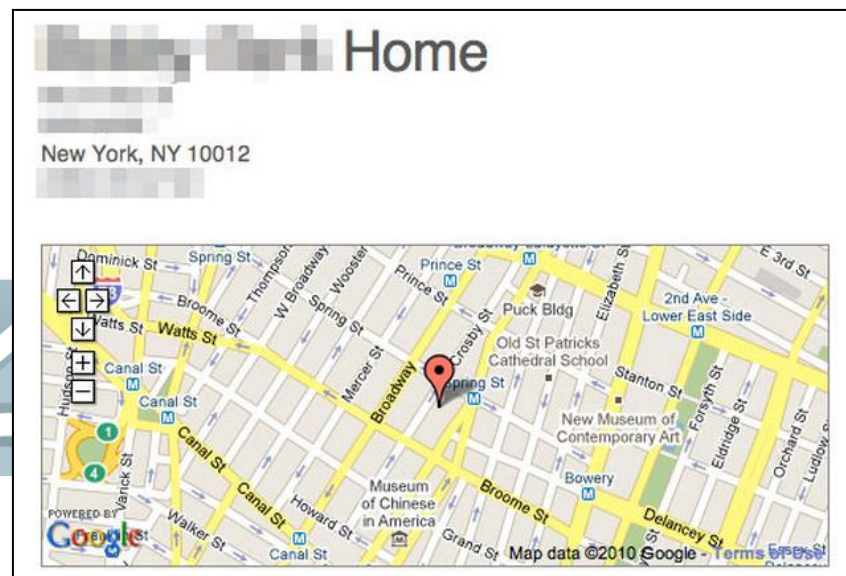
- Mashups

- A web application hybrid

- Combine the functionality or data from several web sites

- Frequently done using web services

- e.g. Combine Google Maps API with Twitter API



<http://www.youtube.com/watch?v=zfZROP2ky4I>

Web services protocols

- Two major protocols:
 - REST (Representational state transfer)
 - An HTTP GET request to a specific URL
 - HTTP is the protocol, no other choice
 - e.g. my Bing and Twitter examples
 - SOAP
 - Originally Simple Object Access Protocol
 - Dropped acronym, not so simple?
 - XML message format
 - Really a framework for specifying protocols
 - HTTP is one profile choice
 - Strong typing
 - Generate proxy class using toolkit

Bing via SOAP



Using SOAP (Bing, Version 2)

6 out of 7 rated this helpful [Rate this topic](#)

Bing Services

The Bing SOAP interface is most efficiently accessed by referencing the **Web Service Description Language** (WSDL) document from a Microsoft Visual Studio project. The WSDL defines the ports and messages that comprise the Bing API SOAP web service.

To add a Web reference in Microsoft Visual Studio

1. From **Solution Explorer** in an existing or newly created project, right-click **References** and, from the pop-up menu, select **Add Service Reference**.

If you are using Microsoft Visual Studio 2005, this pop-up menu includes **Add Web Reference**. In this case, click **Add Web Reference** and proceed to Step 3.

If you are using Microsoft Visual Studio 2008, proceed to Step 2.

2. Click **Advanced** on the **Add Service Reference** dialog box, then click **Add Web Reference** on the **Service Reference Settings** dialog box.
3. Type the following address in the URL text box: **http://api.bing.net/search.wsdl?AppID=YourAppId&Version=2.2**. For information about obtaining an AppId, see [Bing Developer Center](#).
4. Click **Go**.
5. You can accept the default web reference name `net.bing.api` suggested in the **Web reference name** text box, or type your own name for the web reference in the text box. Click **Add Reference** to add the web reference to your project.


```

using BingSOAP.net.bing.api;
namespace BingSOAP
{
    class Program
    {
        static void Main(string[] args)
        {
            BingService service = new BingService();
            SearchRequest request = new SearchRequest();

            request.AppId = "FAEWKJAEAEFJKAFWJKJAEFKJEFWKAFEWJKAWEFKAFWEJFAWE";
            request.Sources = new SourceType[] { SourceType.Web };
            request.Query = "orediggers";

            SearchResponse response = service.Search(request);
            int i = 0;
            foreach (WebResult r in response.Web.Results)
            {
                Console.WriteLine(i + ": " + r.Title);
                Console.WriteLine(i + ": " + r.Url);
                Console.WriteLine(i + ": " + r.Description);
                Console.WriteLine();
                i++;
            }
        }
    }
}

```

C# example that does a query using the Bing SOAP API.

Administrator: cmd

```
c:\Dropbox\mtech\websci\BingSOAP\bin\Debug>BingSOAP.exe
```

```
0: Colorado School of Mines Athletics
```

```
0: http://www.csmorediggers.com/
```

```
0: Official site of the Orediggers with scores, statistics, pictures, and roster  
s.
```

```
1: Colorado School of Mines Athletics
```

```
1: http://www.csmorediggers.com/landing/index
```

```
1: No. 18 Mountaineers Too Much For Orediggers, 28-6 January 28, 2012 Eighth-ran  
ked wrestlers Steven Kelly and Jordan Larsen each posted wins, but visiting and  
18th ...
```

```
2: Montana Tech Athletics
```

```
2: http://www.godiggers.com/
```

```
2: Official site of the Orediggers with news items, scores, statistics, player p  
rofiles, roster and a schedule of games.
```

```
3: Colorado School of Mines - Wikipedia, the free encyclopedia
```

```
3: http://en.wikipedia.org/wiki/Colorado\_Mines\_Orediggers\_football
```

```
3: The Colorado School of Mines (CSM, also referred to as "Mines") is a small pu  
blic teaching and research university devoted to engineering and applied science  
, with ...
```

"REST vs SOAP"



About 79,900 results (0.29 seconds)

[Roots of the REST/SOAP Debate](#)

www.prescod.net/rest/rest_vs_soap_overview/

Abstract. In order to communicate over networks we need standardized data formats and protocols. But how do we move forward toward this goal? One popular ...

"SOAP sucks"



About 32,100 results (0.10 seconds)

[Why SOAP sucks - somebits.com](#)

www.somebits.com/weblog/tech/bad/whySoapSucks.html

Nov 17, 2006 – Why **SOAP sucks**. There's an amusing dialogue floating around about how simple SOAP is. As someone who bears some past responsibility for ...

[SOAP vs. REST | Steve Francia's Epic Blog](#)

spf13.com/post/soap-vs-rest

Jan 15, 2010 – A good read is Why **SOAP Sucks** by Nelson Minar linked above. He was the guy that implemented Google's SOAP interface, which was often ...
You've visited this page 2 times. Last visit: 1/31/12

[Your Soap Sucks - YouTube](#)

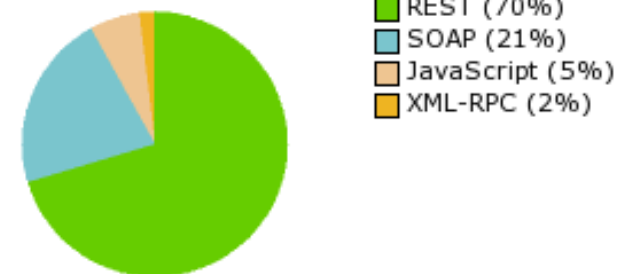


www.youtube.com/watch?v=XIKFORGW3lg

Oct 22, 2009 - 4 min - Uploaded by communitychannel
can bite me. Let me know what the best/most practical gift you have ever received is! Hope you're all well and ...

[More videos for "SOAP sucks" »](#)

Protocol Usage by APIs



ProgrammableWeb.com 01/22/14

Summary

- **Web services**
 - Access to remote procedures / data
 - Promotes integration
 - Better than everybody inventing custom interchange schemes
 - Makes it through firewalls
 - Runs on top of the mature web architecture
- **Possible paper / presentation topics:**
 - Analysis of differences between SOAP and REST
 - Learn details and do something interesting with a specific API
 - e.g. What can be done with the Facebook API?